
Space Weather Forecast

Issued on Friday, 23 August 2024 at 13:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Further Moderate-class flares likely, slight chance of isolated Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate, with two Moderate-class flares recorded in the last 24 hours, the peak flare from an active region in the northwest at 23/0341UTC.

There are currently eleven sunspot regions on the visible disc, with two new regions as yet unnumbered. The largest and most complex region on the disc is situated in the southwest, with another similar sized region approaching centre disc. Both of these regions have seen some recent growth, and an increase in magnetic complexity. The most active region is a region that has recently rotated around the eastern limb, and was responsible for the largest flare mentioned above. AR3801 has been the most active region, with the largest flare of the period as mentioned above. Another region in the southeast has seen a number of intermediate spots quickly forming over the past few hours. The remaining sunspot regions are comparatively smaller or less complex, and mostly either stable or in slight decay.

Two coronal mass ejections (CME) were observed through the period. One was as a result of a filament lift-off in the northwest at around 23/0100UTC, as well as a long-period common-class flare from the same region. Initial analysis suggests that this will pass ahead of Earth's orbit. The second CME observed was as a result of the strongest flare of the period from the active region in the east. but this is expected to pass behind Earth's orbits.

Solar Wind / Geomagnetic Activity: The solar wind was at background levels but with a brief rise to slightly elevated levels. The Interplanetary Magnetic Field (IMF) was weak to moderate. The important north-south component was mostly weak, with some moderate intervals. Geomagnetic activity was Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are likely during the period with a slight chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: Any potential CME (Coronal Mass Ejection) glancing influence is now considered to have passed, with no other Earth directed CMEs evident in available imagery. High speed streams (HSS) from coronal holes in the northwest are likely to exert some weak influence through Day 1 (23 Aug) and perhaps into Day 2 (24 Aug). Solar winds may increase further towards slightly elevated or possibly elevated levels, with any HSS influence then expected to wane thereafter.

Geomagnetic conditions are expected to be largely Quiet to Unsettled (Kp1-3), but with a slight chance of isolated Active to G1/Minor Storm intervals (Kp4-5) intervals on Days 1 and 2 (23-24 Aug), should we see any more significant coronal hole influence.

Energetic Particles / Solar Radiation: Solar radiation is likely to persist at background levels, however there is a chance of exceeding the S1/Minor solar radiation storm level should any notable flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	15	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

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Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	5	5	5	5
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						